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an extreme development of the curved or athyrioid sorus, while others suggest that the athyrioid form is a precursor of the *Dryopteris* form. That *A. filix-femina* is biologically the most recent of the species under consideration is suggested by the fact that it is most common and generally distributed, which indicates that it is best adapted to present conditions; that it is most variable, which may mean that it is a species in the making; and that it is most highly specialized, a smaller portion of the vein being capable of producing sporangia.

D. C. Eaton expresses the belief that no two of these species are closely related. And anyone examining a collection of ferns from various parts of the world is likely to be impressed by the fact that there are two distinct groups, one of which bears a general resemblance to *A. achrostichides* and the other to *A. filix-femina*.

AUBURNDALE, MASS.

Notes and News

A PENNSYLVANIA FERN TRIP

The Doylestown (Bucks Co., Pa.) Nature Club devoted its May meetings, 19th and 26th, to the study of "Ferns" under the guidance of Miss Anna K. Bewley, cryptogammic botanist; George MacReynolds, scribe, and J. Kirk Leatherman, "Dean" of the Doylestown Botanical Club.

On the 19th a "Fern Walk" was taken through the rich floral country adjacent to Doylestown and on the 26th, Miss Bewley gave a talk on "Rare Ferns" at the home of Mrs. George Watson and illustrated her remarks by specimens from her own herbarium and by growing pterodophytes in the nearby wild garden of Miss Ellen D. Smith.

Among the ferns indigenous to Bucks Co., noted by

the Club on its walk and described by Miss Bewley in her remarks, were: *Cheilanthes vestita*, *Asplenium pinatifidum*, *A. platyneuron*, *A. filix fœmina*, *Botrychium virginianum*, *Osmunda regalis*, *O. cinnamomea*, *C. Claytoniana*, *Onoclea sensibilis*, *Dryopteris acrostichoides*, *D. Novoboracensis*, *D. Thelypteris*, *D. marginalis*, *D. spinulosa intermedia*, *Phegopteris Phegopteris*, *Adiantum pedatum* and *Polypodium vulgare*.

The speaker also discussed other rare ferns she had studied, but had not found in Bucks County, combatting strongly the hybrid theory as regards *Asplenium ebenoides* R. R. Scott. and suggesting the new thought on the subject that it would be quite as rational to assume that *ebenoides* and consort might be the parent ferns of either *Camptosorus* or *platyneuron*, as that *ebenoides* was their hybrid.

FERN PROTECTION NEEDED

In the last few years a flourishing industry has sprung up in the collecting of the fronds of our native ferns for florists. One important question at once arises: Does this collecting of fronds injure the plants themselves and in time kill them? As yet I have been unable to answer this question in a satisfactory way. It is true, doubtless, that careless pickers are apt to disturb the roots, which may become exposed to the dry surface air. In time this exposure may cause the death of the plant.

A few figures regarding this fern industry may be of interest. In the town of Cavendish, Vermont, the Christmas fern, *Polystichum acrostichoides* (Michx.) Schott, known to the collectors as the "dagger" fern, has been the only species collected. One season ten to fifteen thousand fronds of this fern were collected daily by two boys and their assistants. From forty to fifty cents per thousand was paid for the fronds collected. From Cavendish alone in one year three hundred and

twenty-five thousand fronds were shipped to a Boston florist. This one florist, in the course of a year uses one million fern fronds and one thousand pounds of ground pine or *Lycopodium* of various varieties. In southern Vermont, *Dryopteris intermedia* (Muhl.) A. Gray, the spinulose wood fern is also collected and shipped to florists. This fern is known to the trade as the "fancy" or "lace" fern. A firm in western Massachusetts, to whom are sent most of the fronds collected in southern Vermont, informs me that their collectors have gathered ferns in the same localities for twenty-five years. They state also that they can see no diminution in the quantity or even the quality of the plants.

If our ferns are in no great danger from this industry, they are in more or less danger from the many nurserymen who are now dealing in our hardy plants. Some of these florists, instead of raising ferns from the spores, buy the plants directly from collectors who despoil our woods of roots. In one section of Vermont, I'm told, a beautiful station for the Goldies fern, *Dryopteris Goldiana* (Hook.) A. Gray, was entirely eradicated by persons collecting for one nurseryman. Our delicate maiden-hair, *Adiantum pedatum* L., is also in danger from being destroyed. Here is a chance for the society for the Protection of Native Plants as well as members of the American Fern Society to do some good work.

HAROLD GODDARD RUGG.

DRYOPTERIS FILIX-MAS \times MARGINALIS UNDER CULTURE.

Miss F. C. Corne sends in the following interesting note:

". . . My hybrid filix-mas \times marginalis, found two years ago at Barnard, Vt., thrives finely under cultivation and has become a more graceful plant, vase-like shape. It has this year eighteen fronds, growing in a

perfect partly double circle. They came up almost simultaneously this time, and the tallest are about thirty-six inches high and nearly ten inches across. As heretofore, the upper halves of the fronds are heavily fruited but these fruit dots appear abortive and under the magnifying glass are like tiny specks of fine sponge or punk.

In the early autumn I hope to press these fronds and with others gathered last summer, would like to offer them for exchange. I shall also have specimens of the more common New England ferns—over thirty species—and several of each to give to any one caring to pay the postage.

ON FERN COLLECTING IN EUROPE.

“Genoa, Rome, Bologna, Florence, Venice and Budapest do not afford very satisfactory opportunities for botanizing. This is particularly true of Venice, and in a brief of several days at most, it is not easy to get into the real country. Still I carry my botanical gun always with me, having learned, like other hunters, that without one’s gun one is likely to come across game which he cannot bag. But even in most cases where I have been able to get away from paved streets, there has been a great lack of the only plants which I have any purpose to collect.

I attribute this for the most to the fact that such soil as I have been able to cover is clayey and poorly drained. On such soil the most I have found are a few species of *Equisetum*. On a rich bank, shaded by deciduous trees, in Budapest, Hungary, *Cystopteris fragilis* and *Asplenium trichomanes* were abundant, but even these widely prevalent species have been surprisingly absent from most of the area which has come under my notice.

An interesting exception to what I have written,

however, was Madeira, where, with a brief stop, I collected a number of species, some of them new to me. That island is an interesting one to those concerned with ferns, as it is for other reasons, and the temptation to remain or return there was very strong. At Gibraltar the only species which revealed itself to me during a detour of several hours was *Adiantum Capillus-Veneris*."

R. A. Ware (in a letter to E. J. Winslow).

American Fern Society

Ten members of the American Fern Society were present at the Summer Field Meeting of the Vermont Botanical and Bird Clubs, in Townshend, Vt., July 1 and 2: Dr. Grout, of New York; Mr. Bissell and Mr. Weatherby, of Connecticut; Mr. Winslow, of Massachusetts; Mr. Rugg, of New Hampshire; Dr. Brainerd, Mrs. Davenport, Mrs. Flynn, Miss Strong and Mr. Underwood, of Vermont.

Corrected Addresses: Miss F. C. Corne, Ash Street Place, Cambridge, Mass.; Mr. H. P. Rogers, 815 French St., Erie, Pa.; Dr. R. W. Amidon, Deerfield, Mass.; Prof. W. J. Petty, Friendship, N. Y.; Mr. G. L. Moxley, 1445 Regina Lane, Los Angeles, Cal.

New members: Mr. Edwin C. Jellett, 118 Herman St., Germantown, Pa.; Mr. Geo. Redles, Box 267, Oyster Bay, N. Y.; Mrs. Mabel McMurry Jackson, Index, Washington; Mrs. Herbert Fletcher, Westford, Mass.; Mr. D. F. Higgins, Hol Kol, Korea.

Mr. G. L. Moxley offers specimens of the following ferns to those who will send postage: *Pellaea ornithopus*, *Aspidium rigidum argutum*, *Cystopteris fragilis*, *Adiantum Jordani*, *A. pedatum*, and *Polypodium Californicum*.